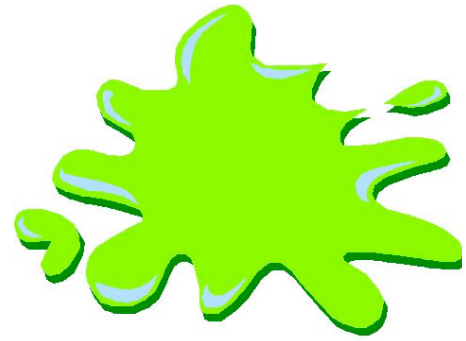


Science Shoebox Activity
Title: What's the Matter? Oobleck...
Grade 3 Physical Science



Content Standard 9 - Matter
Grade Learning Expectation: GLE 0307.9.2 Investigate different types of mixtures.

Performance Indicators State:
SPI 0307.9.1 Describe a substance in terms of its physical properties.

Task Objective: The students will create a mixture called Oobleck and observe the physical properties.

Materials (Oobleck)

Cornstarch, Dixie Cups (one per student), Water, Recording Sheet, Measuring cup, wooden craft sticks Copy of *Bartholomew and the Oobleck* by Dr. Seuss

Materials for Observations

Small objects (pennies, toothpicks), wax paper, hand lenses, other various small objects.

Background Knowledge for Teachers

Solids are materials with a definite volume and shape. They resist forces that tend to deform them. Liquids are relatively incompressible materials that take the shape of their containers and have a free surface, but do not expand indefinitely

Oobleck is a non-Newtonian fluid that, depending on the force applied, will act like a solid or a liquid. You can roll it in your hands and create a solid ball, but as soon as you stop moving it will turn back to a liquid and ooze through your fingers. It is a fluid whose viscosity is variable based on applied stress.

Across the Curriculum

Math

Collect data regarding precipitation over a period of time in different regions of the United States. Create and analyze charts and graphs to compare the amount and type of precipitation.

SPI 0306.5.1 Interpret a frequency table, bar graph, pictograph, or line plot.

Social Studies: Government

Discuss and compare various structures for government and how power is regulated and controlled. Compare these structures to the King's power within the book.

3.4.tpi.1. recognize different types of governments exist in the world.

3.4.tpi.2. discuss the reason why people have governments.

Language Arts

Read *Bartholomew and the Oobleck* by Dr. Seuss and discuss what caused the Oobleck as a form of precipitation and how the conflict was resolved.

SPI 0301.5.1 Draw appropriate inferences and conclusions from text.

SPI 0301.5.3 Identify stated cause/effect relationships in text.

SPI 0301.8.6 Determine the problem in a story and recognize its solution.

References

Oobleck Recipe - numerous recipes are described on the internet - typically they call for one part water to two parts corn starch.

The Answer Files: What are the States of Matter?

<http://whyfiles.org/071questions/3.html>

What is a Non-Newtonian Fluid?

<http://www.wisegeek.com/what-is-a-non-newtonian-fluid.htm>

What's the Matter? Oobleck...

Student Instructions:

1. Prepare your sample of Oobleck using the materials provided:

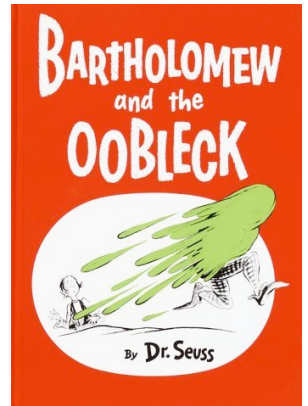
- Measure 5 ml of water and pour in your Dixie Cup
- Add one drop of green food coloring
- Slowly mix 10 ml of cornstarch into the colored water using a craft stick

2. Make observations of Oobleck by pouring the substance on wax paper.

Use the following table to record your observations. Use the materials provided (pennies, toothpicks, hand lens, etc.) to interact with the Oobleck.

3. Answer the assessment questions that follow and clean up the supplies.

Be sure to leave all materials as you found them. Oobleck should not be poured down the sink. Please throw materials in the trash can.



Test	Observations
Appearance, color, weight, texture	
Feel - touch with finger	
Feel - push finger quickly into substance	
Pour some on wax paper. Describe what happens. Does it pour like a liquid?	
Scrape some of it off. What does it look like? What does it look like after a few seconds?	

Try picking up a piece. How does it feel?	
Put some into palm of hand and try to roll into a small ball. What happens when you stop rolling it?	
Test the substance with small objects. Record what happens.	
Try to push some of the objects slowly and quickly over the surface. Record observations.	

Assessment

1. In what ways does Oobleck behave like a solid?
2. In what ways does Oobleck behave like a liquid?
3. Describe other materials that have properties of Oobleck.
4. What type of matter would you classify Oobleck as? Justify your answer.